

Alopecia Areata and Hypothyroidism

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An 8-year-old girl presented to a primary care clinic for evaluation of diffuse alopecia.

History. Approximately 1½ months earlier, she had been seen by a pediatric dermatologist for patchy hair loss and had received a diagnosis of alopecia areata. She had been prescribed topical mometasone and minoxidil. Initially, mild improvement had occurred, but she subsequently developed diffuse hair loss. At follow-up, she was noted to have a down-trending height velocity and increased body mass index that had been gradual over the past 4 years, as well as a history of hypothyroidism in several family members on the maternal side.

Physical examination. At presentation, 2 large patches of thinned hair with minor evidence of hair growth were noted (**Figures 1 and 2**). Compared with photographs taken 2 months prior, the extent of hair loss was more diffuse. The skin was warm and well perfused, with no significant lesions. The thyroid was mildly enlarged, but no nodules were appreciated. Sexual development was Tanner stage I. The remainder of the examination findings were unremarkable.



Figure 1. A large area of hair loss over the superior scalp in the parietal region, with fairly diffuse thinning.



Figure 2. A large area of hair loss over the superior scalp in the parietal region, with fairly diffuse thinning.

Figure 2. *A discrete patch of hair loss on the occiput.*

Diagnosis and treatment. In the setting of decreasing height velocity and rising body mass index, thyroid studies were obtained to investigate for hypothyroidism as a coexisting condition and potential contributor to the child's hair loss. Her thyrotropin level was elevated to 8.0 mIU/L (reference range, 0.6-4.8 mIU/L), and her free thyroxine (FT₄) level was low at 0.9 ng/dL (reference range, 1.0-1.7 ng/dL).

These studies were repeated in 2 weeks, revealing a thyrotropin level of 8.4 mIU/L and FT₄ level of 0.8 ng/dL. Results of thyroid peroxidase antibody testing returned elevated at 137.7 IU/mL (reference value, <9.0 IU/mL).

With a diagnosis of Hashimoto thyroiditis, the patient was started on levothyroxine treatment, titrated to 25 µg daily. At follow-up in approximately 3 months, the patient was noted to have marked improvement in hair growth, with return in thickness to baseline (**Figures 3 and 4**). Her thyrotropin and FT₄ levels were also noted to be within the normal range.



Figure 3. *Significant hair regrowth over the superior scalp at a 3-month follow-up visit.*

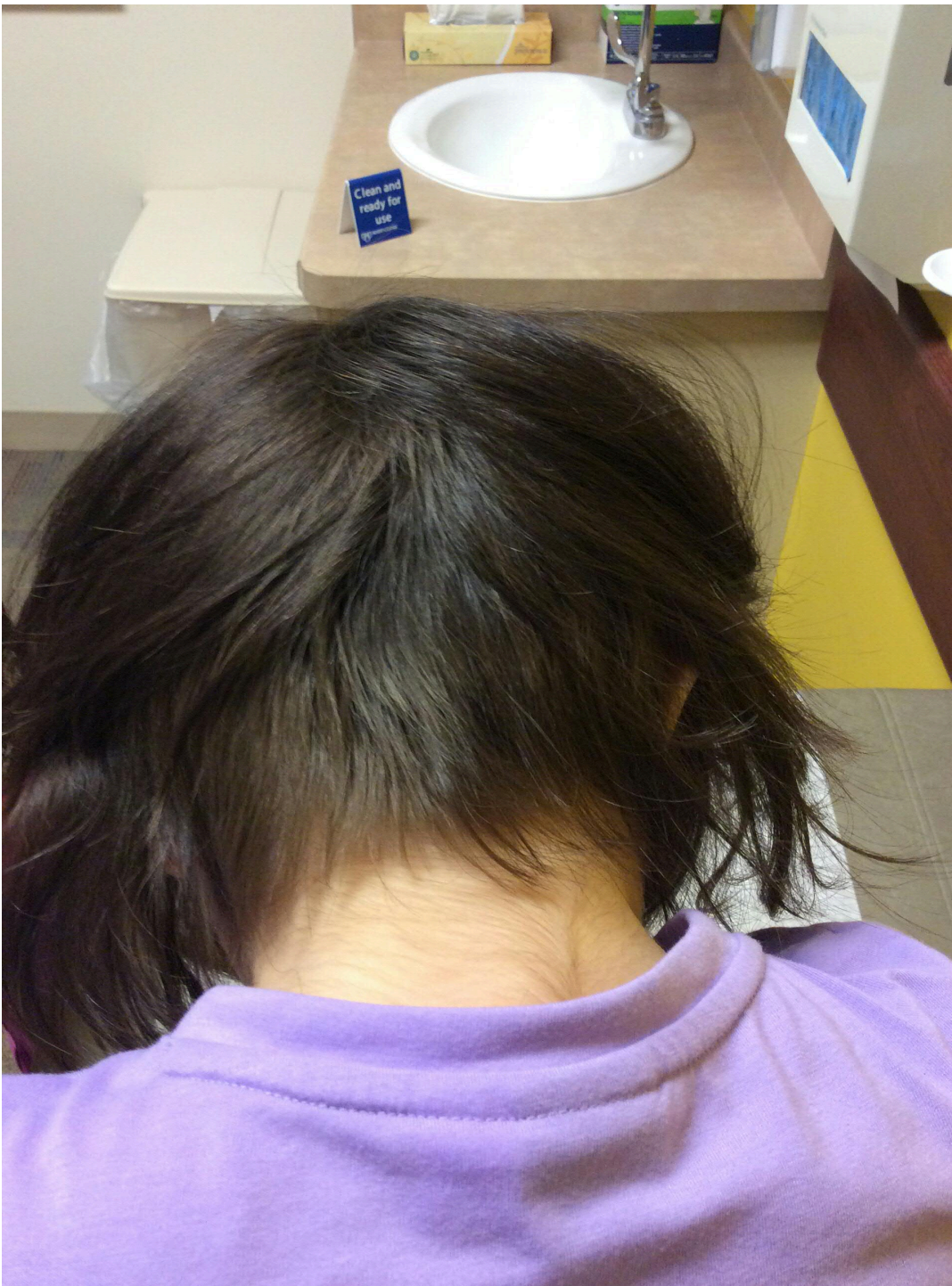


Figure 4. Significant hair regrowth over the occiput at a 3-month follow-up visit.

Interestingly, at follow-up 4 months later, results of thyroid function studies remained in the normal range; however, a small area of hair loss with exclamation point hairs over the right parietal region was noted on examination (**Figure 5**).



Figure 5. A small patch of hair loss with exclamation point hairs over the right parietal region.

Discussion. Alopecia areata is a nonscarring hair-loss condition that may present in childhood. The spectrum of disease can range from discrete patches of hair loss, which is the most common presentation, to the complete absence of hair.¹

The pathogenesis of alopecia areata is described as being autoimmune but is likely multifactorial. It has been associated with several other autoimmune conditions.² Alopecia areata is distinguished from certain nondiffuse hair-loss conditions by its smooth appearance and pathognomonic exclamation point hairs (hair follicles thicker at the distal end).

The differential diagnosis includes conditions such as tinea capitis, trichotillomania, androgenic hair loss, and telogen effluvium. Tinea capitis is most often characterized by scaly patches and broken hairs. Trichotillomania typically has a characteristic hair-pulling history, as well as physical examination findings of hairs with varying lengths. Androgenic hair loss presents with typical male and female patterns. Telogen effluvium is a diffuse hair loss that can be difficult to distinguish from diffuse alopecia areata and that has multiple causes, including stress, nutritional deficiencies, medication use, anesthetic events, and thyroid dysfunction, among others. Biopsy ultimately can distinguish the different causes of hair loss.¹

Hashimoto thyroiditis is a cause of hair loss and is also one of the autoimmune conditions known to be associated with alopecia areata.² Patients with alopecia areata are at increased risk of having autoimmune thyroid disease.³ However, there is some suggestion that the causality may be the converse, with risk of developing alopecia areata in the setting of certain autoimmune conditions, including Hashimoto thyroiditis.² Hypothyroidism is also a known cause

autoimmune conditions, including Hashimoto thyroiditis. Hypothyroidism is also a known cause of telogen effluvium, presenting with diffuse hair loss that improves with thyroid hormone replacement.⁴

Our patient likely had hair loss of multifactorial etiology. Her initial pattern was consistent with alopecia areata. However, her condition failed to respond to topical corticosteroids and minoxidil. Her diffuse hair loss dramatically improved after initiation of levothyroxine and normalization of her thyroid function. Nevertheless, after several months of normal thyroid function, she presented again with a focal patch of hair loss. This patient likely did in fact have alopecia areata, especially given the recurrence, with exacerbation of hair loss in a diffuse distribution that can be seen with telogen effluvium secondary to hypothyroidism.

This case demonstrates that hypothyroidism can be not only an associated condition with a hair-loss disorder, but also a contributor, such that thyroid dysfunction should be considered when alopecia areata is diagnosed and when investigating causes of hair loss, particularly when there is a family history or other suggestive features of abnormal thyroid function.

References

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